Vol. 3 No. 1 Edisi Januari 2026 E. ISSN. 3032-2472
Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

DEVELOPMENT OF THE BRIKUDA BUSINESS MODEL AS AN ALTERNATIVE ENERGY SOURCE TO ENHANCE ECONOMIC VALUE USING THE BUSINESS MODEL CANVAS APPROACH

PEMBANGUNAN MODEL BISNIS BRIKUDA SEBAGAI SUMBER ENERGI ALTERNATIF UNTUK MENINGKATKAN NILAI EKONOMI MENGGUNAKAN PENDEKATAN BUSINESS MODEL CANVAS

Rio Firmansyah[1*], M. Oktaviannur[2]

[1*]Bandar Lampung University, Email: rio.22111009@student.ubl.ac.id
[2]Bandar Lampung University, Email: oktaviannur@ubl.ac.id

*email koresponden: rio.22111009@student.ubl.ac.id

DOI: https://doi.org/10.62567/micjo.v3i1.2259

Abstract

The global demand for energy continues to increase alongside population growth and rapid industrial development, while dependence on fossil fuels remains high. This presents challenges related to environmental degradation, carbon emissions, and concerns over long-term energy availability. Biomass-based alternative energy has emerged as one of the strategic solutions to support sustainable energy transitions, particularly in developing countries such as Indonesia. One potential biomass source that remains underutilized is horse manure, which can be processed into briquettes known as Brikuda. This study aims to analyze the potential of Brikuda as an alternative energy source and to develop a sustainable business model using the Business Model Canvas (BMC). A qualitative descriptive approach was employed, involving in-depth interviews, direct observations, and analysis of secondary data. The findings reveal that Brikuda has strong potential as a renewable fuel due to the abundant availability of horse manure in Bandar Lampung. It offers economic benefits, reduces environmental pollution, and supports local empowerment. The Business Model Canvas analysis shows that farmers and livestock breeders are the primary customer segments, while the value proposition emphasizes affordability, environmental friendliness, and ease of use. The study concludes that the Brikuda business model can enhance local economic value, promote sustainable waste management, and serve as a feasible alternative energy innovation. The research contributes to the development of renewable energy entrepreneurship and provides a reference for policy formulation in promoting local-based bioenergy initiatives.

Keywords : biomass energy, Brikuda, business model canvas, renewable energy, alternative fuel, sustainable development.

Abstrak

Permintaan energi global terus meningkat seiring dengan pertumbuhan populasi dan perkembangan industri yang pesat, sementara ketergantungan pada bahan bakar fosil tetap tinggi. Ini menghadirkan

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

tantangan terkait dengan kerusakan lingkungan, emisi karbon, dan kekhawatiran tentang ketersediaan energi jangka panjang. Energi alternatif berbasis biomassa telah muncul sebagai salah satu solusi strategis untuk mendukung transisi energi berkelanjutan, terutama di negara-negara berkembang seperti Indonesia. Salah satu sumber biomassa yang masih kurang dimanfaatkan adalah kotoran kuda, yang dapat diolah menjadi briket yang dikenal sebagai Brikuda. Studi ini bertujuan untuk menganalisis potensi Brikuda sebagai sumber energi alternatif dan mengembangkan model bisnis yang berkelanjutan menggunakan Business Model Canvas (BMC). Pendekatan deskriptif kualitatif digunakan, melibatkan wawancara mendalam, observasi langsung, dan analisis data sekunder. Temuan menunjukkan bahwa Brikuda memiliki potensi besar sebagai bahan bakar terbarukan karena ketersediaan kotoran kuda yang melimpah di Bandar Lampung. Ini menawarkan manfaat ekonomi, mengurangi pencemaran lingkungan, dan mendukung pemberdayaan lokal. Analisis Business Model Canvas menunjukkan bahwa petani dan peternak adalah segmen pelanggan utama, sementara proposisi nilai menekankan keterjangkauan, ramah lingkungan, dan kemudahan penggunaan. Studi ini menyimpulkan bahwa model bisnis Brikuda dapat meningkatkan nilai ekonomi lokal, mempromosikan pengelolaan limbah yang berkelanjutan, dan berfungsi sebagai inovasi energi alternatif yang layak. Penelitian ini berkontribusi pada pengembangan kewirausahaan energi terbarukan dan memberikan referensi untuk perumusan kebijakan dalam mempromosikan inisiatif bioenergi berbasis lokal.

Kata Kunci : energi biomassa, Brikuda, kanvas model bisnis, energi terbarukan, bahan bakar alternatif, pembangunan berkelanjutan.

1. INTRODUCTION

Global energy demands continue to rise as population expansion and industrial development accelerate. Despite efforts to diversify energy sources, fossil fuels including coal, oil, and natural gas remain the dominant primary energy sources worldwide. Their non-renewable nature, combined with increasing greenhouse gas emissions, has amplified environmental challenges such as global warming and climate change. As stated in global energy transition agendas, the Sustainable Development Goals (SDG 7) emphasize access to affordable, reliable, sustainable, and modern energy for all. This has intensified global initiatives to develop cleaner and more sustainable energy alternatives.

In developing countries such as Indonesia, the transition toward renewable energy continues to face challenges related to technology adoption, cost efficiency, and the absence of sustainable business models capable of supporting long-term implementation. Although Indonesia possesses abundant renewable energy resources, including solar, wind, and biomass, the utilization of these resources remains suboptimal. Based on national energy consumption data, fossil fuels continue to dominate the energy mix, while the contribution of biomass as a traditional energy source has declined. This shift reflects not the depletion of biomass potential, but rather the lack of innovation and efficient management in transforming biomass into modern, high-value energy products.

Biomass offers enormous potential as a renewable energy source, particularly through its conversion into solid fuels such as briquettes. Various agricultural and livestock wastes can be processed into alternative energy sources with higher combustion efficiency, lower emissions, and reduced environmental impact. One livestock waste that remains underutilized is horse manure. In regions such as Bandar Lampung, daily horse manure production from breeding

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

and recreational riding activities creates both environmental and public health concerns when not properly managed. However, with appropriate processing, this waste can be transformed into briquettes known as Brikuda (horse-manure briquettes), which can serve as a cost-efficient and sustainable energy source for households, farmers, and small-scale industries.

Brikuda provides several advantages: the raw materials are abundant and inexpensive, the production process is relatively simple, and the product offers social and environmental benefits by reducing pollution and creating economic value from waste. Despite these strengths, Brikuda is not yet commercially developed due to the absence of a structured and comprehensive business model that connects production, market segmentation, value creation, distribution channels, and revenue streams. Many community-based renewable energy initiatives fail because they lack a clear business framework capable of ensuring economic viability and long-term sustainability.

Therefore, the Business Model Canvas (BMC) is used in this study as a strategic tool to design a business structure that aligns production potential, customer needs, and market feasibility. The BMC helps identify customer segments, value propositions, key partners, key activities, cost structures, and revenue sources in a systematic manner. By mapping these components, the research aims to develop a comprehensive business model for Brikuda that supports commercialization and enhances economic value for local communities in Bandar Lampung.

Based on these considerations, this study investigates the development of the Brikuda business model as an alternative energy innovation and examines how it can increase economic value at the community level. The findings are expected to contribute to academic research on renewable energy entrepreneurship and provide practical insights for local governments, small enterprises, and community groups involved in sustainable energy initiatives.

a. Alternative Energy

Alternative energy refers to energy sources that are renewable, sustainable, and environmentally friendly compared to fossil fuels. According to Lisbona (2023), alternative energy plays a strategic role in global energy transition efforts, particularly in reducing carbon emissions and mitigating climate change. Alternative energy sources including solar, wind, geothermal, and biomass offer long-term solutions to increasing energy demands while reducing dependence on finite fossil resources.

In developing countries such as Indonesia, the adoption of alternative energy remains an ongoing challenge. Gani (2024) argues that the potential for renewable energy utilization in Indonesia is abundant, yet the lack of adequate systems, technological support, and strategic business models often hinders its implementation. Effective development of alternative energy requires integrated approaches that involve government support, community involvement, and innovative business strategies.

b. Biomass Energy

Biomass is one of the most widely used forms of renewable energy globally due to its availability and flexibility in application. Biomass includes organic materials derived from

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

plants, animals, and agricultural waste. According to Tun (2023), biomass has the advantage of being easily accessible in rural areas and can be converted into energy through thermochemical and biochemical processes, such as combustion, pyrolysis, and anaerobic digestion.

Indonesia, as an agrarian country, generates significant amounts of agricultural and livestock waste that can serve as biomass energy sources. Biomass energy not only reduces the volume of organic waste but also provides communities with affordable energy alternatives. Gani (2024) emphasizes that biomass can support decentralized energy systems that empower rural communities through small-scale energy production and distribution.

c. Briquettes and Brikuda

Briquettes are compacted solid fuels produced from processed biomass materials. The process typically involves drying, grinding, mixing with a natural binder, and compressing the biomass into uniform shapes. Marreiro (2024) explains that briquette quality is influenced by moisture content, particle size, and pressure applied during compaction.

Brikuda is a type of biomass briquette made from horse manure. Studies by Padang et al. (2020) indicate that horse manure contains high levels of carbon and fiber, making it suitable for conversion into briquettes. Utilizing horse manure helps reduce waste accumulation, prevents environmental pollution, and generates new economic opportunities for communities near horse farms or recreational riding facilities.

Furthermore, Purwaningsih (2020) highlights that community-based waste-to-energy innovations can improve household incomes while reducing dependency on conventional fuels. These findings support the potential of Brikuda as both an environmental and economic innovation.

d. Business Models

A business model describes how an organization creates, delivers, and captures value. It outlines key components such as customers, value propositions, resources, activities, and revenue generation mechanisms. Dobrowolski and Sułkowski (2021) emphasize that business model innovation is essential for increasing organizational resilience, particularly in the renewable energy sector.

The success of renewable energy initiatives often depends on the ability to develop a business model that aligns technological potential with market needs. Widjaya (2021) notes that entrepreneurial approaches play a significant role in transforming local resources into viable energy products that stimulate local economic growth.

e. Business Model Canvas (BMC)

The Business Model Canvas, developed by Osterwalder and Pigneur, is a strategic tool consisting of nine elements: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structures. It allows businesses to visualize and analyze how value is created and delivered.

In renewable energy projects, BMC is widely used to examine market feasibility and design sustainable business strategies. According to Lisbona (2023), BMC helps identify

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

opportunities for innovation and facilitates alignment between environmental goals and business profitability. Previous studies demonstrate that the BMC framework is effective in guiding renewable energy microenterprises and ensuring long-term sustainability.

Despite the growing body of research in this area, studies specifically focusing on horse-manure briquettes using a BMC approach remain limited. This research fills that gap by offering a structured model for developing Brikuda as a competitive and sustainable alternative energy product.

2. RESEARCH METHOD

a. Research Design

This study employs a qualitative descriptive research design aimed at exploring the development of the Brikuda business model as an alternative energy innovation. Qualitative methods allow researchers to examine social, economic, and environmental phenomena through perspectives, experiences, and interpretations provided directly by stakeholders. According to Creswell (2018), qualitative research is suitable for exploring complex issues that require contextual understanding rather than numerical measurement.

b. Research Location and Duration

The research was conducted in Bandar Lampung, Indonesia, particularly in areas where horse-related activities are prominent, such as Kemiling, Sukabumi, and Rajabasa. These locations were selected through purposive sampling based on the availability of horse manure and potential user communities. Data collection took place from November 2025 to January 2026.

c. Types and Sources of Data

Two types of data were used in this study:

1) Primary Data

Primary data were collected through in-depth interviews with Brikuda developers, potential users (farmers and livestock breeders), and local stakeholders. Direct observations were conducted to document production processes, raw material availability, and operational challenges.

2) Secondary Data

Secondary data were obtained from government reports, scientific journals, academic books, and documentation related to renewable energy, biomass utilization, and business model development.

d. Data Collection Techniques

Three techniques were used to collect research data:

1) In-depth Interviews

Interviews were conducted using semi-structured question guides to allow flexibility in exploring insights from informants. The interviews focused on market potential, production processes, challenges, and perceptions of Brikuda.

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

2) Observation

Direct observations were conducted at horse farms and production sites. The observations included material collection, drying processes, briquette formation, and packaging.

e. Documentation

Supporting documents were collected to validate field findings, including photos, notes, government publications, and prior research.

f. Informant Selection Technique

sInformants were selected using purposive sampling, focusing on individuals with direct relevance to Brikuda development, including developers and potential users. Data saturation determined the final number of informants, ensuring that no new information emerged during data collection.

3. RESULT AND DISCCUSSION

a. Overview of Brikuda Development

The findings of this study indicate that Brikuda—briquettes produced from horse manure—has strong potential as an alternative energy product in Bandar Lampung. The availability of horse manure in areas such as Kemiling and Sukabumi provides a consistent supply of raw materials. Informants highlighted that the increasing cost of conventional fuels encourages farmers and livestock breeders to seek more economical and sustainable alternatives. Brikuda fulfills this need due to its affordability, ease of use, and environmentally friendly nature.

Observations conducted in the field show that the production of Brikuda involves simple processes including drying, grinding, mixing with natural binders, and compression into briquette form. These processes can be executed using basic equipment, making them suitable for small-scale, community-based production. This aligns with findings from Marreiro (2024), who notes that waste-to-energy briquette innovations are appropriate for rural development due to their low technological requirements.

b. Business Model Canvas Analysis

1) Customer Segments

The primary customers identified are farmers and livestock breeders who require continuous energy sources for daily activities. Interviews revealed that these groups are price-sensitive and prioritize affordability and reliability. The findings are consistent with Widjaya (2021), who argues that rural microenterprises in Indonesia tend to adopt alternative energy solutions when they offer clear economic benefits.

2) Value Proposition

Brikuda offers several key values:

- ✓ Affordable alternative fuel
- ✓ Utilization of waste materials
- ✓ Environmentally friendly and low emissions
- ✓ Simple and safe to use

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

Informants emphasized that affordability is the most critical value. This supports the argument of Gani (2024) that renewable energy innovations in developing countries must emphasize cost efficiency to achieve market acceptance.

c. Channels and Customer Relationships

Direct marketing is the most effective distribution channel during early commercial development. This allows producers to simultaneously promote the product and educate users. Interviews showed that consumers require demonstrations and explanations to build confidence in using Brikuda. This reflects Hidayat's (2021) assertion that social engagement is vital for renewable energy entrepreneurship.

d. Revenue Streams

The primary revenue source is the sale of Brikuda. Additional potential revenue sources include:

- ✓ Training on briquette production
- ✓ Partnerships with horse farms for waste management
- ✓ Collaboration with local government programs related to renewable energy

Diversified revenue streams increase the resilience of the business model, as demonstrated by Dobrowolski and Sułkowski (2021).

e. Key Resources and Key Activities

Essential resources include:

- ✓ Horse manure
- ✓ Local labor
- ✓ Basic production equipment

Key activities involve raw material collection, production processes, quality control, marketing, and consumer education.

f. Key Partnerships

Partnerships with horse owners, local producers, and government institutions are crucial. These partnerships help ensure raw material availability, facilitate community involvement, and open access to potential funding or training programs.

g. Cost Structure

The major costs are associated with:

- ✓ Production
- ✓ Labor
- ✓ Equipment
- ✓ Distribution

Using local materials and simple tools reduces operational expenses, making Brikuda highly competitive compared to conventional fuels.

g. Economic and Environmental Benefits

The results indicate that Brikuda contributes not only to energy sustainability but also to improved economic conditions at the community level. Farmers and community members can participate in production activities, generating additional income and supporting local job

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

creation. This aligns with Purwaningsih (2020), who states that waste-based energy initiatives provide tangible economic benefits for rural communities.

Environmental benefits include reduced waste accumulation, diminished odor pollution from horse manure, and reduced reliance on fossil fuels. These benefits contribute to SDG 7 (Affordable and Clean Energy) and SDG 12 (Responsible Consumption and Production).

h. Discussion

The analysis demonstrates that Brikuda is a feasible and sustainable energy innovation with potential for commercial expansion. The Business Model Canvas provides a structured overview of how Brikuda can be positioned within the alternative energy market. The model identifies the essential elements needed to ensure long-term viability, particularly customer segmentation, value proposition, and collaborative partnerships.

The findings confirm previous literature that emphasizes the importance of integrating social, environmental, and economic dimensions in renewable energy entrepreneurship (Hidayat, 2021; Lisbona, 2023). Brikuda illustrates how local resources can be transformed into value-added products through appropriate business strategies.

4. CONCLUSION

This study concludes that Brikuda, a briquette product made from horse manure, holds significant potential as an alternative energy source and community-based economic innovation in Bandar Lampung. The availability of raw materials, low production costs, and positive environmental impacts make Brikuda a viable renewable energy product capable of reducing dependence on fossil fuels.

The application of the Business Model Canvas framework effectively identifies the essential elements needed to develop a sustainable business model for Brikuda. Farmers and livestock breeders represent the most promising customer segments, while affordability and environmental benefits serve as the core value propositions. Partnerships with local stakeholders, government support, and consumer education are key success factors.

The study contributes to the growing body of literature on renewable energy entrepreneurship, particularly in the context of biomass utilization and community-based business development. Future research is recommended to include quantitative market feasibility studies, product performance testing, and scalability analyses to further strengthen commercial implementation.

5. REFERENCES

Barusman, M. Y. S., Simarmata, J., Dunan, R., Oktaviannur, M., Aprinisa, D., & Ardiansyah, M. (2025). Pengembangan UMKM Produk Olahan Kelapa Desa Bunut, Lampung. Universitas Bandar Lampung.

Creswell, J. W. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). SAGE Publications.

Dobrowolski, Z., & Sułkowski, Ł. (2021). Business model innovation and organizational

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

resilience in energy sector SMEs. Energies, 14(18), 5678.

Gani, A. (2024). Strategic models for sustainable bioenergy development in Indonesia. Renewable Energy Policy Journal, 12(2), 45–60.

Hidayat, R. (2021). Integrating social, economic, and environmental dimensions in renewable energy entrepreneurship. Journal of Sustainable Innovation, 9(1), 14–29.

Lisbona, A. (2023). Innovation in sustainable business models for renewable energy systems. Energy & Environment Review, 20(4), 233–249.

Marreiro, R. (2024). Waste-to-energy innovations: Briquette technology for rural development. Journal of Biomass Engineering, 7(3), 112–128.

Miles, M. B., Huberman, A. M., & Saldana, J. (2018). Qualitative data analysis: A methods sourcebook (4th ed.). SAGE Publications.

Padang, S., Rahmawati, D., & Yusuf, M. (2020). Potensi kotoran ternak sebagai bahan baku briket biomassa. Jurnal Energi Terbarukan, 5(2), 67–75.

Purwaningsih, S. (2020). Pemanfaatan limbah peternakan sebagai energi alternatif berbasis masyarakat. Jurnal Pengabdian dan Energi Terbarukan, 3(1), 22–30.

Tun, H. (2023). Biomass energy and its role in sustainable rural development. International Journal of Renewable Resources, 16(2), 101–117.

Widjaya, H. (2021). Entrepreneurial approach to biomass energy innovation in Indonesia. Asian Journal of Green Technology, 4(1), 59–72.